Karin Figala, 1938–2007

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The community of historians of alchemy and chemistry—and our community of historians of science more generally—deplores the death of Karin Figala, the charming emeritus head of the Institute for History of Technology of Munich's Technical University. Figala was born in 1938 in Vienna, the daughter of an industrial chemist and pharmacist employed by the local branch of Knoll's Pharmaceutical Industries. Her great-grandfather Figala had been a pharmacist in Radovic, Slovenia, which in those days was known as Radmannsdorf and was part of Austria. After World War II, her father having been wounded, the family moved to Frankfurt to take refuge with grandfather Figala. After high school in Frankfurt, Karin Figala enrolled, in 1960, as a student of pharmacy and nutrients chemistry, taking classes at the universities of Bern, Bonn, and Hamburg. Those were years of the utmost poverty for a regenerating West Germany, and even food was an object of daily concern. The frail student Figala bought "sausages for the dog" at the butcher's—which sausages ended up on her own plate. In mid-1966 she embarked on a history of pharmacy project under Günter Kallinich at Munich's Technical University. The project resulted, in March 1969, in an "inaugural dissertation" devoted to the

medieval scholar Ortolf von Baierland, the author of an *Arzneibuch* (drug manual). The project had been inspired by Figala's discovery that Ortolf was not a legendary personality but had in fact been a real pharmacist. Her results confirmed the importance of abbey libraries as repositories of medieval medical manuscripts and, what is more, the interest of the latter for contemporary pharmaceutical science. At the time Eugen Bamann, the great German pharmacist, was still directing Munich's Institute for Pharmacy and Nutrients Chemistry; Helmuth Gericke taught a general course in the history of science.

Figala's career reflects an interesting period for history of science in Munich. The discipline had existed as such only since the 1930s, when Kurt Vogel (1888–1985) introduced a course in the history of mathematics at Ludwig Maximilian University. It was not until 1963, however, that the first associate professorship was created: Helmuth Gericke (1909–2007) was nominated, and he would serve until 1980. That very same year, a chair for the history of the exact sciences and technology was founded around the corner, at the Technical University, where Joachim Otto Fleckenstein (1914–1980) became the first incumbent. In the 1970s both institutes moved to the Library Building of the Deutsches Museum, on the Museum Island in the Isar River. At that time Karin Figala replaced Fleckenstein and Menso Folkerts succeeded Gericke. While Folkerts's interests continued those of Vogel, focusing on mathematics, Figala concentrated on alchemy and chemistry. The Deutsches Museum itself had—and still has—a research institute of its own; it is now directed by Ivo Schneider.

From 1969–1970 onward, Figala came to focus on Isaac Newton's alchemy. As is generally known nowadays, Newton was a devoted chemist-alchemist who spent a lot of time on the subject, doing (almost secret) experiments in his private apartment at Trinity College, Cambridge. In the early 1970s, however, the matter of Newton's interest in alchemy was still a shocking novelty, for physicists, chemists, and historians alike. It was Betty Jo Teeter Dobbs (1930–1994) who, in her great monograph *The Foundations of Newton's Alchemy; or, "The Hunting of the Greene Lyon"* (Cambridge, 1975), opened this new field of research. At that time Figala was in the process of finishing her *Habilitation* dissertation. Like Jo Dobbs, she was fully equipped: during their years as students chemistry had been a favorite subject for both of them. In 1977, as a sort of preprint announcing her *Habilitation*, Figala published a critical essay on Dobbs's monograph entitled "Newton as Alchemist" (*History of Science*, 1977, *15*:102–137). The message of both Figala and Dobbs was clear: it is incorrect to neglect Newton's alchemical manuscripts when studying his chemical experiments, as reported in his laboratory notebooks and in the *Queries* that conclude *Opticks*, most noteworthy Query 31 (1718 ff.). Their position in these matters brought about a turning point in the appreciation of Newton's chemistry. In their 1958 article on Newton's metallurgical chemistry, the distinguished couple Marie Boas (Hall) and A. Rupert Hall had deliberately omitted the alchemical context, overtly anxious to stress their hero's exact science (*Archives Internationales d'Histoire des Sciences*, 1958, *11*:113–152). Since then, Newton's chemistry had been considered on the same footing as his physics.

In September 1977, then, Figala passed the *Habilitation* under Otto Fleckenstein with a dissertation entitled "Die 'Kompositionshierarchie' der Materie: Newtons quantitative Theorie und Interpretation der qualitative Alchemie." The German *Habilitation* is a crucial stage in one's academic career, a promotion that brings the "*venia legendi*"—the privilege to lecture as a university professor.[1] This solemn passage calls for an *Antrittsvorlesung*, a formal lecture in which the core of the dissertation is exposed and embedded in a professorial research project, as proposed by the candidate. Figala's dissertation, then, was in two parts, with a supplement consisting of text editions of three of Newton's manuscripts. The first part assessed Newton's composition theory of matter, considering both its mathematical foundations and various physical and (al)chemical aspects; this part provided further evidence for its influence on the physically oriented chemistry of the eighteenth century. The second part described Newton's system against the background of his forerunners and his contemporaries. Among the predecessors, the Polish scholar Michael Sendivogius (1556–1636) appeared to be the most influential, but the Rosicrucian tradition embodied by Michael Mayer (1568–1622) was also important. Moreover, Gassendi's atomic theory and Van Helmont's vitalistic iatrochemistry contributed to Newton's formation. As to the contemporaries, Figala discussed the ideas of More, Leibniz, and Vigani and their relation to those of Newton. The supplement, finally, gives the texts of three of Newton's manuscripts, together with introductions and translations. The dissertation concludes with a summary. Most unfortunately, Figala's dissertation was not published as such. An abridged version, however, appeared in the *Verhandlungen der*

Naturforschenden Gesellschaft zu Basel (1984, *94*:157–228). It reveals—if we read between the lines—something typical for Figala: her wish not only to rethink Newton's alchemical trajectory but also to duplicate his experiments. So, for instance, in 1974 she repeated the laboratory synthesis of what Newton called his "Diana," an alloy of bismuth ore, tin, and bismuth in an exactly specified proportion, which he himself had made in August 1682: the resulting alloy indeed featured the same properties (i.e., its silver-like appearance and density) and effects as those described by Newton. Later, in the paperback edition of her *magnum opus* (1983), Dobbs would generously acknowledge the mastery of her junior colleague. International recognition soon followed: in June 1978 Figala was elected a corresponding member of the Académie Internationale d'Histoire des Sciences. These were busy years. Thanks to the efforts of Figala and Ernst Berninger, Otto Fleckenstein got a rich *Festschrift* on the occasion of his sixty-fifty birthday (1979). That same year, Figala was chosen to receive the distinguished Ann Horton Visiting Research Fellowship of Newnham College, Cambridge, which enabled her to consult, on the spot, the manuscript legacy of Newton, particularly the part that was given by John Maynard Keynes to the library of King's College.

In the German speaking-world, Figala marched in the footsteps of Anneliese Maier (1905–1971), the great medievalist who—with Pierre Duhem (Bordeaux)—determined the outlook of the scholastic natural philosophers. What Maier did for the Scholasticists, mostly in Rome, Figala did for Newton, in Cambridge: studying manuscripts and bringing scores of interesting new facts to light. In 1985 Figala attended the XVIIth International Conference of History of Science, at Berkeley, California.

In about 2001 Figala's lifelong health problems surfaced brutally: she had undergone a double kidney transplant in Boston. It had been known that there was something physically wrong, but outside the circle of her collaborators and her students no one knew what was at stake. At the great congress "Alchemy Revisited," held at the University of Groningen in April 1989, she was represented by Ulrich Neumann; at the XVIIIth International Congress of History of Science (Hamburg, Munich), in August of that year, she did not appear. Colleagues familiar with her frail appearance and her nonetheless joyful manner discreetly speculated about the reasons for her absence. The problem was increasing renal insufficiency, requiring two days of dialysis each week. Early in 1999, then, Figala was finally allowed to retire. One of her endeavors had just been successfully brought to completion: the publication, together with Claus Priesner, of an encyclopedic dictionary entitled *Alchemie: Lexicon einer hermetischen Wissenschaft* (Beck, 1998). In her charming way, she had succeeded in enlisting a team of contemporary specialists, among them Marco Beretta, Charles Burnett, Antonio Clericuzio, Gad Freudenthal, Gundolf Keil, William Newman, Lawrence Principe, Pamela Smith, and Jost Weyer. No wonder, then, that the *Lexicon* was very well received; see, for instance, Winfried Scheiner's review in *Isis*, 2001, *92*:391–392.

Once retired, Figala's physical problems did not prevent her from applying for a Senior Fellowship at the Dibner Institute in Boston.[2] She proposed to show that, for Newton, alchemy functioned as a bridge between his theological views and his exact scientific stands. Figala wanted to chart Newton's activities in the various domains of his interests chronologically. She hoped to reveal what she called the "evolutionary tree" of what he had done—that is, both a diachronic and a synchronic scheme. As Figala wrote in her project proposal: "The sublime aim would be a detailed, textually supported view of what Newton thought while he was pursuing certain aspects of his science." In the end, she hoped to be able to publish her *Habilitation* thesis, now embedded in the broader context of all of Newton's scientific activities. In this hope she was not alone: both Richard Westfall (1924–1996) and Derek Whiteside (1932–2008) had generously encouraged her on several occasions. In a way, the right moment had arrived: Figala had been invited to join the Advisory Board that would oversee the scholarly edition of Newton's unpublished manuscripts; she was to lead the Alchemical Section. It was her turn, so to speak, since both Dobbs and Westfall had passed away.

If alchemy was of paramount importance in her work, Figala's attention was not limited to alchemy alone. I would add, as an example of her broad-minded view of the profession, that she was also actively involved in the editorial team that has been overseeing, since 1978, the publication of the collected papers of Copernicus.

Looking backward, then, we may regret that Figala's ongoing health problems prevented her from realizing her dream, the publication of the monograph on Newton's alchemy. We may take pride, though, in having had in our ranks such a

distinguished scholar and shining personality as Karin Figala.

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NOTES

1. In 1995 the *Habilitation* ceremony was introduced in France, more particularly at the École des Hautes Études en Sciences Sociales, Paris. In the French academic framework it is meant to create "directeurs de recherché," Ph.D. supervisors who are entitled to direct a research group of their own—for example, under the aegis of the Centre National de la Recherche Scientifique (CNRS).

2. The celebrated Dibner Institute, with its Burndy Library, was closed in 2005. The Burndy Library was relocated to become part of the Huntington Library, in San Marino, California; the archives of the Dibner Institute are also kept there.